

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Takashi Horai et al.  
Application No. : 10/693,314  
Filed : October 24, 2003  
For : METHOD AND APPARATUS FOR RECORDING DATA IN  
OPTICAL RECORDING MEDIUM AND OPTICAL RECORDING  
MEDIUM

Examiner : Latanya Bibbins  
Art Unit : 2627  
Docket No. : 890050.445  
Date : February 22, 2008

Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

RENEWED PETITION UNDER 37 C.F.R. 1.183  
REQUEST FOR RECONSIDERATION

Commissioner for Patents:

In response to the Petition being dismissed which was mailed December 31, 2007, applicants request reconsideration and submits this Renewed Petition. Applicant made a more diligent search for the unavailable co-inventor and was able to locate this further co-inventor during this search. Accordingly, enclosed herewith is a Declaration signed by all four co-inventors attesting to the conception and reduction to practice of the invention prior to September 10, 2002.

Since the signed document that was the subject of the Petition has been obtained and is submitted herewith, it believed that the conditions for granting of the Petition have satisfied and the case is ready to go back to the Examiner. It is requested that the Declaration be

entered, Petition be granted and that the case be forwarded to the Examiner so that the art can be removed and the claims allowed on the merits.

Applicants' attorney notes that the Office Action against which the petition was filed was mailed August 21, 2007. Since the Petition was filed, and the file transferred to the Petitions Group, applicants' attorney believes that the appropriate due date for the Response is February 29, 2008, which was the due date for requesting reconsideration of the Petition and for responding to the most recent Office Action, which was the ruling on the petition, mailed December 31, 2007. Further, since the reply to the action on the Petition is timely, it is believed that no extensions of time are due. Accordingly, it is believed that the current Response to the Petition Office mailing is timely and no fees are due.

On the other hand, if the Patent Office believes that the timely reply to the Petition response is not timely for responding to the Office Action, then applicants request that the U.S. Patent Office treat this reply also as a response to the Office Action on the merits that was mailed on August 21, 2007. Applicants' attorney notes that the due date for the prior response to the prior Office Action expired yesterday, February 21, 2007. It was the intent and the desire of applicants to keep the case active and pending as is clear by the current response and is also clear by the telephone interview with the Petition Examiner on January 17, 2008. Accordingly, if the Patent Office believes the application has become abandoned, then this Petition is also a petition that the abandonment was unintentional and as a petition and request to revive the application and request any extensions of time that are needed.

The Office is authorized to deduct from the deposit account any fees which they believe necessary for necessary extensions of time and the petition to revive for unintentionally abandoning the application if such is deemed necessary. Thus, even though applicants believe that the response is timely and that such a petition and extension of time are not needed, in the event the Examiner and the U.S. Patent Office believe such petitions are appropriate, this response is requested to be treated as such petitions and that the Declaration be entered for consideration of the case on the merits.

Respectfully submitted,  
SEED Intellectual Property Law Group PLLC

/David V. Carlson/  
David V. Carlson  
Registration No. 31,153

DVC:alb

Attachment:  
Declaration

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Commissioner of Patents  
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Alexandria, VA 22313-1450

DECLARATION OF TAKASHI HORAI, NARUTOSHI FUKUZAWA,  
SYUJI TSUKAMOTO, AND HIROYUKI ARIOKA UNDER 37 CFR 1.131

Sir:

1. We, Takashi Horai, Narutoshi Fukuzawa, Syuji Tsukamoto, and Hiroyuki Arioka, hereby declare as follows:

2. We are the four co-inventors of the above-listed patent application which has been filed in the U.S. Patent and Trademark Office.

3. We had conceived of, and reduced the present invention to practice prior to September 10, 2002, the filing date of U.S. Patent Application No. 2003/0067857 to Shirota et al. (hereafter "Shirota et al.") In particular, prior to September 10, 2002, we, the named inventors, had reduced to practice the invention of claims 1-12 of the above-referenced application as originally filed.

4. As evidence of our having conceived and reduced to practice the invention prior to the date of September 10, 2002, attached herewith as Exhibit A is a copy of two pages evidencing reduction to practice of the invention. These documents provide evidence of actually carrying out the practice of the invention and the operation of working examples. (The boxes

marked with the numbers #1, #2, #3, #4 and #5 have been added by the U.S. patent attorney for ease of reference in the translation.)

5. Exhibit A is a document prepared by the inventors evidencing the practicing of the invention. This document, in Japanese, shows on pages 1 and 2 actual examples being carried out practicing the claimed invention. In particular, as can be seen looking at the example on page 1, the power  $nT_{top}$  is 1.8 and the ratio of the power  $Ph/P_m$  has been set in Example 1 to be 1.43. (In the application filed in the U.S.,  $nT_{top}$  is referred to as  $t_{top2}$  and the recording power was represented as  $P_w$  in place of  $Ph$ , so this corresponds to a ratio of  $P_w/P_m$  of 1.43 of the claimed invention.) See column 2 of the chart showing the example on page 1 of Exhibit A. Turning now to page 2 of Exhibit A, further results of working examples of the invention are shown. On page 2, a chart is provided that has working examples each labeled as Example 1, Example 2 and Example 3 by the U.S. patent attorney. In addition, in each of the examples, the recording level  $nT_{top}$  has been set to 1.8, 1.9, and 1.7, respectively, so that in each example this power is equal to or greater than 1.7 T, which is a feature of the claims.

6. As can be seen from the second page of Exhibit A, the conditions for recording in the reduction to practice of the invention presented as examples 1, 2 and 3 were provided as the working examples having the recording conditions 1, 2 and 3 in the application as filed.

7. Page 2 of Exhibit A also contains further evidence of the invention being reduced to practice in the note Mr. Horai added at the bottom, enclosed in Box #5. This note states that the recording was conducted with an  $nT_{top}$  of 1.9 and the  $Ph/P_m$  of 1.45. This is further evidence of practicing the invention. Thus, Exhibit A provides the evidence of the actual working examples for the reduction to practice of the present application as filed in the U.S. Patent and Trademark Office.

8. We further declare that page 1 of the attached Exhibit A was completed prior to July 12, 2002. It was provided on July 12, 2002 by TDK to the law firm of Oishi and Partners to prepare the present application. Page 2 of Exhibit A was personally prepared by Mr. Horai on July 16, 2002. This page 2 was prepared by Mr. Horai by adding the additional working examples on page 2 to the electronic document which had existed as page 1. For example, as can be seen, pages 1 and 2 are identical in many respects except for the additions Mr.

Horai made on page 2 on July 16, 2002. Page 1 has one working example which shows an operational embodiment of the invention as now claimed. When page 2 was prepared, Mr. Horai added two additional examples of carrying out the present invention to further verify the parameters of operation as now claimed in the present application. Therefore, on page 2, Mr. Horai personally added the data of examples 2 and 3. In addition, Mr. Horai added the note at the bottom that in example 2 the recording was carried out with an nTtop of one of 1.9 T and a ph/pm of 1.45. Mr. Horai then noted that such a result had never been obtained before. This can be seen as the additional box on the lower part of page 2 of Exhibit A.

9. In conclusion, Exhibit A, pages 1 and 2, provides actual working examples of the inventors having reduced to practice the claimed invention and having provided these working examples to the patent attorneys in Japan who prepared the application for filing to cover the present invention which was subsequently filed in the U.S. Patent and Trademark Office.

10. While the documents of Exhibit A do not on the face thereof have a date, we have personally verified that date of Exhibit A, page 1 to be completed by July 12, 2002 and page 2 to have been prepared by Mr. Horai personally on July 16, 2002.

11. Further, we provided these documents to the patent attorney in Japan of Mr. Oishi's firm, who prepared the application on behalf of TDK on the date of July 12, 2002 and shortly after July 16, 2002, respectively. These were used to prepare a new application, bearing Japanese Application No. 2002-316216, which was subsequently filed in the United States in correspondence to the present application.

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information or belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the captioned patent application or any patent issued therefrom.

February 1, 2008  
Date

Takashi Horai  
Takashi Horai

February 1, 2008  
Date

Narutoshi Fukuzawa  
Narutoshi Fukuzawa

February 1, 2008  
Date

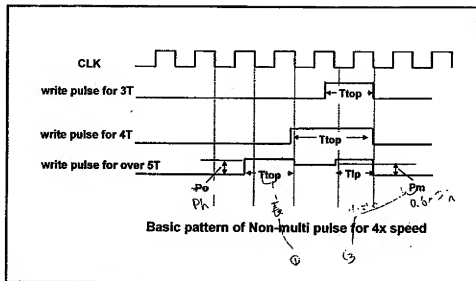
Syuji Tsukamoto  
Syuji Tsukamoto

February 1, 2008  
Date

Hiroyuki Arioka  
Hiroyuki Arioka

Attachment: Exhibit A  
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1097852\_1.DOC

8)



○上はDVD-R4倍速記録で提案されているストラテジです。 #1

|       | type1 | type2 |
|-------|-------|-------|
| 3Ttop | 2.25  | 2.25  |
| 4Ttop | 2.60  | 2.50  |
| nTtop | 1.50  | 1.50  |
| nTwt  | (n-1) | (n-1) |
| nTlp  | 1.00  | 1.00  |

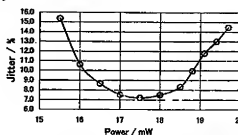
Basic Write Strategyとして左記の2タイプが決まっています。  
メディアによって最適なパワー比があり、おそらく実機ではその比率のもとに最適パワーをコントロールするはずですが。  
ですがTDK内での検討の結果、この2タイプの5T以上のTtopを長めにしてPh/Pm比を大きく(Pmを小さく)した方が、ジッターのマージンが広がる結果が得られました。

「実施例」 Example

|       | type2 | 実施例   |
|-------|-------|-------|
| 3Ttop | 2.25  | 2.25  |
| 4Ttop | 2.50  | 2.50  |
| nTtop | 1.50  | 1.80  |
| nTwt  | (n-1) | (n-1) |
| nTlp  | 1.00  | 1.00  |

Ph/Pm 1.38 1.43

Jitter margin (4x)



○-type2

実施例

理由の推測ですが、  
-5T以上のマークにはPm(ミドルパワー)を設定して記録するので、Ph/Pm比とTtop(トップパルス)とTlp(ラストパルス)でマーク長を調節できます。  
たとえばTDKメディアはPh/Pm 1.38、18mW程度で特性がトムになりますが、  
高パワーになったときにはPh/Pm 1.38ではなく、Pm比を上げたほうが実は特性が良い。  
しかしPh/Pm比はドライブでは固定である。  
それに対し、実施例はTtop長めにしてマーク長を形成しているので、Pmの依存性がより小さい。  
よってジッターの劣化が小さい。

「効果」

・ドライブのパワーバラツキ、メディアの感度バラツキに対しては広いマージンを持っていたほうが良いので、実施例ストラテジが有効。

「手段」

Basic Write Strategyよりも、5T以降のマークのTtop長めに、Pm小さめにする。  
好ましくはnTtop 1.70T以上2.00T以下。(いま実施例が1つしかないです。近々検討の予定)。

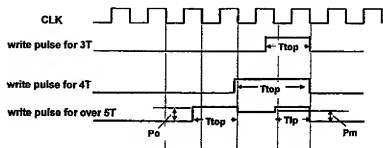
Exhibit A, page 1

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# ○記録ストラテジに関する改善—DVD—R4倍速記録用メディア

#4



Basic pattern of Non-multi pulse for 4x speed

○上はDVD—R4倍速記録で提案されているストラテジです。

#1

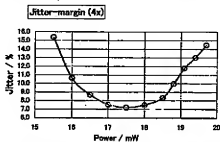
|       | type1 | type2 |
|-------|-------|-------|
| 3Ttop | 2.25  | 2.25  |
| 4Ttop | 2.60  | 2.50  |
| nTtop | 1.50  | 1.50  |
| nTwt  | (n-1) | (n-1) |
| nTtp  | 1.00  | 1.00  |

・Basic Write Strategyとして互いの2タイプが決まられています。  
メディアによって最適なパワー比があり、おそらく実績ではその比率のもとに  
最適パワーをコントロールするはず。  
ですがVTDK内での検討の結果、この2タイプの5T以上の $T_{top}$ を長めにして  
 $Ph/Pm$ 比を大きく( $Pm$ を小さく)した方が、ジッターのマージンが広くなる結果が得られました。

#2

|       | type2 | 実績例1  | 実績例2  | 実績例3  |
|-------|-------|-------|-------|-------|
| 3Ttop | 2.25  | 2.25  | 2.25  | 2.25  |
| 4Ttop | 2.50  | 2.50  | 2.50  | 2.50  |
| nTtop | 1.50  | 1.80  | 1.90  | 1.70  |
| nTwt  | (n-1) | (n-1) | (n-1) | (n-1) |
| nTtp  | 1.00  | 1.00  | 1.00  | 1.00  |

Ph/Pm 1.38 1.43 ? ?



○ type2

実績例1

Example1

理由の推測ですが、

・5T以上のマークには $Pm$ (ミドルパワー)を設定して記録するので、 $Ph/Pm$ 比と $T_{top}$ (トップパルス)と $T_{tp}$ (ラストパルス)でマーク長を調整できます。  
たとえばVTDKメディアは $Ph/Pm$  1.38、18mW程度で特性がトムになりますが、  
高パワーになったときには $Ph/Pm$  1.38ではなく、 $Pm$ 比を上げたほうが実は特性が良い。  
しかし $Ph/Pm$ 比はドライブでは固定である。  
それに対し、実績例は $T_{top}$ 長めにしてマーク長を形成しているので、 $Pm$ の依存性がより小さい。  
よってジッターの劣化が小さい。

#3

「効果」

ドライブの「パワー」バラツキ、メディアの感度「バラツキ」に対しては広いマージンを持っていたほうが良いので、  
実績例ストラテジが有効。

「手役」

Basic Write Strategyよりも、5T以降のマークの $T_{top}$ 長めに、 $Pm$ 小さくする。  
好ましくは $nT_{top}$  1.70T以上2.00T以下。(いま実績例が1つしかないです。近々検討の予定)。

「実績例2」

上記  $nT_{top}$  を1.9Tとし、 $Ph/Pm$ を1.45として記録した。  
(結果はまだありません)

#5

Exhibit A, page 2

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TRANSLATION OF MARKED TEXT PORTIONS OF  
EXHIBIT A FROM HORAI DECLARATION

*Note: The phrases provided between square brackets ("["and"]") are supplied by the interpreter, while the other form of brackets and phrases therebetween are found in the original Japanese texts.*

**TEXT #1**

"Depicted above is a strategy proposed for 4X DVD-R recordings."

**TEXT #2**

"Two types of strategies, shown left, have been adopted as Basic Write Strategy. Since the optimum power ratio depends on the media, an optimum power in actual devices would likely be controlled under such ratio.

However, the research within TDK has revealed that grater margins for jitter is obtained in these two types by using longer Ttop and larger Ph/Pm ratio (i.e., smaller Pm) for 5T or above."

**TEXT #3**

"The possible mechanism is as follows:

In recordings for marks of 5T or above, Pm (middle power) is adopted. Therefore, the mark length can be adjusted by Ph/Pm ratio, Ttop (top pulse) and Tlp (last pulse). For example, TDK's media gives a bottom [jitter] characteristic at around Ph/Pm = 1.38 and 18mW. In reality, the media shows a better performance for a higher power if [Ph]/Pm ratio is increased, instead of Ph/Pm = 1.38.

However, the [conventional] drive has a fixed Ph/Pm ratio.

Contrary [to the conventional drive], the [present] example shows smaller dependency on Pm because the mark length is formed with extended Ttop. As a result, reduction of deterioration in the jitter is achieved.

**'Advantages'**

Wide margins are favorable in light of fluctuations in power of drives and in sensitivity of media, thus, the strategy in the example is advantageous.

**'Means'**

For marks of 5T or above, Ttop is set longer and Pm is set smaller than those for Basic Write Strategy. Preferably, nTtop is set between more than or equal to 1.70 T and less than or equal to 2.00 T. (We have obtained only one example at this stage. Now we are planning to research in the near future.)"

**TEXT #4**

"Improvement Regarding Write Strategy --- 4X DVD-R Recording Media"

**TEXT #5**

“ ‘Example 2’

The recording has been conducted with the nTtop of 1.9 T and the Ph/Pm of 1.45. (The result has never been obtained.)”

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